

This is the mammal part of a series of
notes on the fauna and flora of the Yellowstone
Nat. Park, projected by Dr. Mearns and
found among his effects.

C.W.R.

Honorary Curator,
Section of Birds' Eggs.

ASHINGTON, D. C.,

March 8, 1901.

(Sheet I.)

Cervus canadensis (Erxleben).
ELK.

April 22, 1902. — One old bull was seen grazing on the Gardner River, Montana, at the altitude of 5500 feet.

April 19, 1902. — A large herd was seen grazing on the hills behind the M.H.S. Hotel.

Dec. 13, 1902. — Cows and calves in herds on the hills about M.H.S. At least 5000 were ranging between Mt. Evans and Turkey Pen Trail east of the Gardner River.

July 29, 1889. — When crossing from the Upper Geyser Basin to the Yellowstone River by way of Mary Lake, an old bull trotted across the road ~~in front of~~ ^{before} the coach. His horns were in the velvet, and, apparently, not more than half grown.

Scouts Holt and Morrison saw a female Elk chase a Coyote that had partly eaten ~~the~~ ^{the} Elk-fawn. This was on the head of Black-tail Deer Creek. Trailing the mother Elk the scouts came upon the calf, still alive though horribly mutilated, the ~~Coyote~~ Wolf having commenced to feed upon its flesh without stopping to kill it. The infuriated mother ^{Elk} would have caught up with the Coyote had she not turned aside to follow another one that started up closer to her. The first Coyote was so worn out from running that it fell to the ground and lay panting with its tongue hanging from its mouth. (2?)

In August a horn was found on the road, beside the Gardner River. The velvet had been stripped off; but the odor of decay was so strong that the horn had been discarded by its owner.

Specimens of Cervus canadensis (Erxleben).

(Sheet II.)

Cervus canadensis (Erxleben).
Elk.

At least 10,000 Elk, and probably many more are in the Park. On my arrival, April 19, 1902, a herd was feeding in sight of Fort Yellowstone, on the base of Sepulcher Mountain. This herd increased to about 300 within a few weeks. Others were seen on the Montana strip of the Park, one, on April 22, as low as 5500 feet. Others ~~were~~ at a still lower altitude, that had died during the winter were found in a marsh close to the Yellowstone River, at the foot of the Turkey Pen trail. Hundreds of Elk were ~~seen~~ April and May, east of Mount Evans, on Fresh, cushion grass were found beside the Gardner River opposite Fort Yellowstone and the Mammoth Hot Springs, were several young cows and old bulls were seen dead. The scouts informed me that most of the took the fresh during winter, as old bulls and young of both sexes, then being to my few old cows among the number.

Cervus canadensis (Erxleben).

(Sheet 14.)
3

Elk.

In July, 1902, the scouts were sent out to gather some of the newly-born Elk for the animal pen. Three of the number died, and were preserved as specimens, and sent to the U.S.N.M.

Towards the end of September the Elk commence to descend from their summer pastures. In 1902, the first heavy snow of the season fell, at Elk Mammoth Hot Springs, on September 28th; but it was not until November 17 and 18 that snow fell in sufficient amount to remain on the ground at that altitude (about 6200 feet). The scouts said that Elk would reappear on Sepulcher Mountain, in view of our quanta, "after the second snow-storm." As early as October 5, we heard Elk whistling on Benson Pass and in Snow Pass. This was the end of the rutting season, and none were heard whistling later. About the end of October the elk had moved to the upper border of the Mammoth Hot Springs, where

Cervus canadensis (Erxleben).

(Sheet 4)

Elk.

to the 1-mile post (altitude 6635 feet). On November 14, ~~the~~ a bull and two cows came down to the same place; and tracks at the neighboring Dedolph Spring showed that others had been down before them. From this time on a few Elk were occasionally seen about the Mammoth Hot Springs; but there was no general movement before

Nov. 9, 1902. - Two soldiers passed me in Snow Pass who had seen a herd of 14 Elk on upper Glen Creek. One of the men remarked: "Elk sure can run and jump!"

Oct. 17, 1902. - The country east of Mt. Evans was all tracked over by Elk, but the weather was severe, the snow quite deep, and not an Elk to be seen. Mr. Holt supposed they had descended or else taken refuge for the time in some sheltered woods where they escaped observation.

Elk were first heard whistling at Fort Yellowstone on the night of November 18, 1902, when the large herd arrived at Sepulchre Mountain to spend the winter. There were very few old males, and as it was the end of the rutting season no others were heard whistling that year. ^{After} ~~for~~ a few days only females and young remained

(I a)

Snowstorms then ^{Elk} go down into the ~~77~~ valleys and feed on the tall blue grass. Sometimes they stay down in the blue grass country all winter. A horse can subsist on this grass a fortnight at a time.

They begin to whistle and rut about Aug. 25. Cows have you from 6500 ft upward. In summer most of the Elk are above 7500 feet. In winter they go down to the Yellowstone R. & Jackson Lake.

Holt says the story that Elk are roped in deep snow and have their teeth extracted is a fable. Most of the elk teeth sold are taken from carcasses of dead elk—mostly from Jackson Hole where ~~too~~ several hundred stray and die each winter. Holt found 12 calves in an area of 150 yds square in Fall River Basin in April 1900. They were too weak to stand and all died of starvation. The old Elk were very poor at the same time. They had been caught in them by heavy snowfall & had tried to hold out around the warm springs.

Elk migrate down out of the Park during November. Holt thinks the number killed outside the park is as great as the number that die from natural causes. He has known a hunter to kill 20 and leave them in a pile to rot.

Young Elk remain with mother ~~till~~ ~~the next young~~ ~~on~~ about a year. Holt has sometimes seen newly-born calves & the young of preceding year with the mother, but this is rare. (over)

Elk.

Horns shed during February and March. (When I arrived in the Park April 17, there were no horns on any species of Deer.). In August they begin to mature, and the velvet is then rubbed off on Jack-pine (*P. murrayana*) and quaking asp (*P. tremuloides*). In August bucks may be seen running about with flakes of velvet a foot or more in length dangling from their horns.

When about to bear young the cow elk goes into a thicket of Jack-pine saplings hiding her calf among fallen logs which are usually lying in abundance in the nursery-like growths of young *Pinus murrayana*. She seldom feeds at a distance greater than 200 yards from her calf. When travelling in herds with young calves, the calves "squeal" uttering a peculiar cry. The noise of a passing herd of cows & calves is so great as to drown the human voice.

Males leave the females and herd by themselves ^{abrupt} from the second week of November until the beginning of September.

Holt made a trip 10 miles up the Gardner Valley Nov. 20th & saw 500 cows & calves. Lillian saw 5 males above the snow Pass road Nov. 19.

During pleasant winter weather the (over) ~~the~~

Cervus canadensis (Erxleben). (Sheet 11.)

of the herd on Dipulchre Mountain, which numbered
about
200 on November 19.

A scout named Peter Holt, ^{who has lived in the Park since July, 1893,} gave me much reliable information respecting the Elk as follows: —

They are through rutting about the middle of November, and then ~~as~~ the males cease whistling. The young are born about the first of June; from the 1st to 10th nearly all are born. During the breeding season, when all of the Elk are in the Park, the number of Elk was estimated by Holt at 70,000 head. The female usually bears but one young, quite frequently two, probably never three.

The summer food is ^{mostly} grass. They prefer the short, soft grass that grows around the coarser grasses and in rocky places. The Elk, Hot Springs, do not browse, like the Moose, on aspens; but they polish their horns on aspen saplings from which they rub off much of the bark. [see attached leaf, both sides]

Cervus canadensis (Erxleben). (Sheet VI.)

tendency is for Elk to keep working up higher in the mountains until snowstorms come and drive them down again. The young Elk, and old bulls, are those that perish in greatest numbers during ~~winter~~^{winter}, winter. It is unusual to find dead cows. ~~When~~
~~dead~~
Bulls ~~die~~ are usually found low down, among willows and cottonwoods.

Coyotes prey upon new-born Elk calves, sometimes beginning to tear them to pieces without first killing them. Elk cows usually change their ~~calf~~ An Elk cow usually changes her calf to the shelter of a ~~a~~ different bush each time she feeds it.

(Sheet I.)

Odocoileus hemionus (Douglas).

White-tailed Deer.

Oct. 5, 18902. - A doe with two fawns were seen at the Snow Pass road.

Dec. 13, 1902. - Several were feeding in the Post garden, on the Gardner River (altitude 5600 feet).

Dec. 16, 1902. - On the Gardner River.

~~Oct. 17, 1902.~~ - Three old bucks, one lame, at M. H. S., near 1 mile post (altitude 6700 feet). Very tame. Returned to same spot where found lying down and driven away to "put them through their paces".

From April 19 to , 1902, it was seen about M. H. S., in small bands up to seven, sometimes with larger bands of Mule Deer.

In September, 1902, an enclosure was completed for a herd of Bison, and seven White-tailed Deer were unintentionally enclosed. Not very abundant in the Park. None had horns in April, all having been shed before my arrival. White-tails are seldom seen far from the Yellowstone River and its immediate tributaries, whereas the Mule Deer range throughout the Park.

Oct. 24, 1902. - At 4 P.M. a Doe and two fawns were drinking at the Fort Yellowstone post reservoir.

River, and around Yellowstone Lake,

Along the Yellowstone White-tails are quite numerous. Holt estimates the number in the Park at 1000 head. On East and Fork ^{where} they are especially abundant many shed horns are found. In winter most of the "Fawn-tails" are between the mouth of Gardner River and Soda Butte; but in summer they extend their range to the Yellowstone Lake and its tributaries. One or two ^{at a part.} young ^{young} The horns are shed about as in the Mule Deer. Holt found shed horns on the head of the main Gardner River south of Electric Peak.

Specimens of Odocoileus leucurus (Douglas).

6255. ♂ ad. One shed horn (broken), found at Mammoth
Hot Springs, Wyoming, May 1, 1902.

5437. *bad.* One shed horn, found at Pinabar, Park Co.,
Montana, December 16, 1902.

5438. [♂] ad. One shed horn Ditto.

Odocoileus hemionus (Rafinesque). (Sheet I)

Dakota Mule Deer.

One very red doe was seen 3 or 4 miles below the Lower Geyser Basin, July 27, 1889.

Oct. 6, 1902. — Three at Post reservoir, near Jupiter Terrace.

Aug. 1, 1902. — Saw doe with 2 fawns on Sepulchre Mtn.

Dec. 13, 1902. — Many were seen between M. H. S. and Gardiner City (5300 to 6300 feet altitude).

Dec. 16, 1902. — Abundant on the Gardiner River.

Oct. 12, 1902 — The first "Black-tails" returned to the ~~upper~~ edge of the M. H. S. "formation" early in September, ~~but~~ were rarely seen before October. By Oct. 11th they had become quite numerous there.

Oct. 17, 1902. — Three old "Black-tail" bucks were found lying down in the woods near the 1 mile post above M. H. S. (altitude 6700 feet). They were very tame, returning to the same spot after they had been driven out of the timber and "put through their paces." Then it was discovered that one buck that had been very reluctant to rise, was lame from a wound. These three remained about the spot for several days, and we were careful not to disturb them.

October 19, 1902. — Lillian saw 15 between M. H. S. & Golden Gate; among the number two old bucks at Snow Pass.

October 20, 1902. — About the Stygian Caves were two herds of Deer, one of does and one of bucks.

Oct. 13, 1902. — 4 does & 1 fawn on old Gardiner road.

Oct. 14, 1902. — Ella saw 34 on border of Beson coral, between Mt. Yellowstone and Bunsen Peak, of which only 4 were old bucks.

Specimens of Odocoileus hemionus (Rafinesque).

5417. ♂ juv. Fragment of skull found at M. H. S., Aug. 1, 1902.

5426. ♂ ad. Weathered horn. Gardner River, Y. W. P., Montana. Found Nov. 28, 1902.

5436. ♂ ad. Pair of horns, found at Cinnabar, Park Co., Montana, December 16, 1902.

5256. ♂ ad. Skull of individual that died after shedding its horns. Given me, in 1902, by a scout named Wagner.

5257 to 5267. ♂ ♂ ad. ad. All shed horns found at Mammoth Hot Springs, Wyoming, during the spring of 1902.

5268. ♂ ad. Shed horn found at Fort Yellowstone post ditch, near Mammoth Hot Springs, Wyoming, October 16, 1902.

5269. ♂ ad. Shed horn found, October 28, 1902, in the foothills of Electric Peak, near Cinnabar, Montana.

Horns. - Holt thinks the young bucks acquire a spike horn within the first year. The horn forks the second year. At 4 or 5 years, their horns ^{have reached} ~~are~~ good size. Horns are shed during February. All of the horns are cast before April. During September and October the rub the velvet from their horns.

Lynx.

(83)

Very abundant in the Park. They are most abundant where Rabbits are most numerous. Between the Fountain Geyser & Gibbon R. is a favorite resort. Food: Rabbits, Grouse, Squirrels. Holt does not personally know of their killing deer, though they are sometimes said to do so. Holt saw one just this side of Obsidian Cliff in February.

Fox

Abundant. They burrow in a manner similar to Coyote. They come about stations & pick up scraps of food at night and even in daytime. Not as shy as Coyotes about visiting camps & cabins. Hare, Rabbits, Grouse, Mice in the slopes. Holt sees them frequently. They have grouse nests when the chicks are young. Feeds on the coyote.

Mule Deer

George Elephant Hayes skinned a Mule Deer Nov. 15th — a buck of unusually large size. One eye had been previously destroyed, probably in fighting. Two small points had also been broken off in fighting. It was killed by another buck. At least ten punctures were made, one point having entered under the ~~fore leg~~ shoulder and penetrated the chest a ~~long~~ ^{deep} distance. Most of the wounds were on the blind side. Scout Holt considered it to be unusually large ^{buck}.

Very numerous all over the Park, descending from the high mountains in winter. They are doubtless outnumbered by the Elk. Holt thinks 5000 would cover the Park herds. Supposed to live 12-15 years. The young are born during the middle part of June. Usually 2 young, but frequently only one. Holt has never seen 3. The fawns are born from 6000 feet upward to the highest mountains. The fawns sometimes leave their mother in the fall, but often remain with their until the following spring. About the beginning of Dec. the old bucks usually separate from the herds of does & fawns, though they sometimes remain together through the winter.

(Sheet II)

Odocoileus hemionus (Rafinesque).
Dakota Mule Deer.

This is the common Deer of the Park. Hundreds were seen between Gardiner and M. H. S. when I arrived, April 19, 1902. All left before July except one young doe, seen, ^{at the altitude of 5700 feet} on the lower Gardiner River, in the evening, early in the month. All had shed their horns before April. The first returned to M. H. S. formation (6650 feet altitude) Aug. 19, 1902.

Sept. 19, 1902. - Old bucks were seen at Canyon Hotel; in winter coat, Sept. 19th.

Oct. 15, 1902. - 11 seen at M. H. S., among them 2 old bucks.

Oct. 24, 1902. - None seen below the Post this fall; but a young Black-tail died from too much cabbage, at the pork garden (5600 feet altitude), Nov. 14, 1902.

Nov. 17, 1902. - With Holt rode around Mt. Everts, passing up Turkey Pen trail and to the right of Red Mountain. Many Deer were seen in deep snow on the high mountains, whence most of the Elk had descended on account of the severity of the weather.

Nov. 10, 1902. - Herds of bucks now much thickened. ^{and fawns} They are now herded with does.

Nov. 11, 1902. - The Deer that have been abundant in Snow Pass have all gone down into the Gardiner River valley since the heavy snow fell. Only one seen in Snow Pass. On Nov. 9, about 100 were seen, bucks with the does.

In October and November the bucks are very bold. An old one often stands at the roadside, and instead of turning aside for a ^{pedestrian or} horseman, lowers his head and rolls his eyes up defiantly. One never knows what to expect. The deer is so swift and powerful that it is necessary to be on one's guard, although I heard of no instances of their attacking persons.

When feeding in deep snow they first paw then root, often raising their heads with a capping of snow on them

ELK - Copied

(79)

tendency is for elk to keep working
up higher on the mountains until
snowstorms come and drive them down
again. The young elk and old bulls are
those that most frequently perish during
winter. It is unusual to find a dead cow.
Dead bulls are usually found low down among
willows & cottonwoods.

Coyotes prey upon new-born elk
calves, beginning to tear them to pieces
and eat them without first killing them.

The elk cow usually changes the
calf to another bush each time she
feeds at.

Moose.

Holt estimates the Moose of the Park to number about 200.

Wagner supposed there were but two very fine old bulls in the Park herd; but Holt thinks there are from 50 to 75 bulls in the Park herds. Most of the Moose are on the South line of the Park; but there are some on the North side and centre. But few stray out of the Park in winter, and those few probably do not go beyond Jackson Lake. Holt saw 2 old bulls just outside the Park line at near Bridger's Lake, in September, 1902.

They breed where they winter in thick heavy willows down low. Usually one young. A sergeant named Lorb saw a cow Elk near Snake River Station that had two young calves. Holt saw one late in April without horns, so he thinks they are cast in March. They winter in places where willows are thickest.

From the Yellowstone Lake to the line it is always tramped up with Moose tracks in winter. The challenge of the bull Moose is very different from that of the Elk. Holt saw cows, calves & bull together in August. Holt thinks Sept. & October cover the rutting season. About the first of June the calves are born. On the Upper Yellowstone River

between the Lake and S. Park line they have mud wallows in summer where they go to get away from insects.

Moose visit the head of Black-tail Deer Creek about 12 miles from M.H.S.

Mr.

a lawyer of Penn'a, killed a 2-yr-old bull $\frac{1}{2}$ m. S. of S.E. corner of the Park, about the middle of Sept., 1902.

Holt knows of no instance in which the moose has suffered from the attacks of other animals than man. Neither the Wolf, Bear, or Puma troubles them.

~~*Felis hippocastes*~~ Copied

Holt thinks 3000 to 4000 would be a fair estimate of the Mountain Lions in the Park. This is estimated from the number of tracks seen in the Park on snow-shoe trips over the Park.

~~3000~~ Holt thinks rabbits and grouse are their principal food. They kill many red ~~1500~~ squirrels. Many deer are killed. Holt does not personally know of an instance where Elk bulls have been killed by Lions, although he has seen where they have eaten dead bulls. [Holt knows of no animals - wolves, bear or Lions having troubled the Moose.]

They kill many Mountain Sheep.

Holt has not ^{personally} known them to kill Antelope.

" " " found nest or young.

Holt saw one in the cow pasture a mile from the fort, laying on a ridge baring itself soon after sunrise. He charged his horse towards it; but this only had the effect of making the Lion swing its tail. It was a large male, and was left where found.

Scout James G. Morrison shot 5 lions under a big pine ♀ & 4 young, 1877-98. During some deep snow.

Copied

Alces americanus Gordinie.
Moose.

A Moose was shot near the southern border of the Park, in September, 1902. A scout arrested and a trial was had; the party, but it chanced that the animal was ^{beyond the Park limit.} slain just ~~south of the Park line.~~

A scout told me he supposed there were but two fine old bulls in the Park herd of Moose; but Mr. Heolt

Antilocapra americana (Ord).

(Sheets 5-6)

Antelope; Pronghorn.

July 24, 1902. — A young female of the year died in the pen at M. H. S., and was preserved. "Hair slipped off of forehead."

July 23, 1902. — ♀ juv. Ditto "White mark is apparent on throat."

Dec. 13, 1902. — On the right side of the Gardner River, towards its mouth, a small band of Antelope was seen, most of their range being occupied by 50 horses and cows that settlers had turned out to graze on the winter range of the Antelope.

Dec. 16, 1902. — Herd feeding between the Gardner and Yellowstone rivers, just above Gardiner City.

April 19, 1902. — Hundreds range along the north border of the Park, in the vicinity of Gardiner City, Montana. Later many were seen on the ~~head of~~ Black-tail Deer Creek and east of Mount Everts. When closely approached the old males would stamp and bloat. Four young fawns that died in the animal corral at the Mammoth Hot Springs, during July, 1902, were prepared for the U. S. Nat. Mus. collection.

The first Antelope returned to ~~Gar~~ their winter feeding-ground, near Gardiner, on Oct. 25, 1902, when about

Specimens of Autelocapra americana (Ord).

| | | | | |
|-------|--------|---------------|--|------------------|
| 5251. | juv. | 1902. | Caught by the scouts on Black-tail Deer Creek. Died in the animal corral. | Skull and skull. |
| 5252. | juv. | 1902. | Ditto | do |
| 5253. | ♀ juv. | July 23, 1902 | { White markings apparent on throat } | Ditto. |
| 5354 | ♀ juv. | " 24, " | Ditto. | do |

Sheet 11.)

Antilocapra americana (Ord).
Antelope; Pronghorn.

25 were seen.

Holt says the Coyote is the greatest enemy to the Antelope. In winter, when the earth was deeply covered with snow, the Antelope ~~When~~^{and} were traveling ~~up~~ on a bare ridge. Mr. Holt has seen Coyotes take a position in front of the Antelope ~~up~~ with the object of making them plunge into deep snow to one side, where, while floundering they ~~were~~^{were easily} caught ~~in~~ and killed by the Coyotes. Old Antelope turn and retrace their steps if they see a Coyote ^{waiting} in front of them. Many adult Antelope are killed by Coyotes; but only the young of the Deer are, as a rule, attacked.

On November 17, 1902, Mr. Holt and I saw a female Antelope flying with her utmost speed up a steep mountainside. Suspecting that a Mountain Lion had attempted to spring upon her ~~as~~^{as she was} crossing ravine, we rode to the spot and found that a Coyote had given her a frightened her. Lying ~~in a~~ ^{until} ~~in a~~ ^{was} ~~thicket of sagebrush~~, the cunning old fellow ~~had~~ ^{had} been at us in favored security, ~~that~~ a bullet from

Antilocapra americana (Ord). (Sheet III.)
Antelope; Pronghorn.

Holt's rifle laid him low. These Coyotes are quite large. ~~This one, an~~ ^{length of the} ~~as~~ ^{the fresh skin almost} This one was skinned, without measuring, and, when held up, ~~was just~~ ^{equalled} my own height.

Nov. 17, 1902. - Mr. Holt and I saw 75 Antelope at the north base of Mt. Everts. Mr. Holt supposes the total number of Antelope wintering on the north side of the Park to possibly exceed 1000.

Antelope are mostly confined to the north where a herd of near 1000 still ranges on the side of the Park, the formerly large herd that ranged ~~is~~ in the Madison Basin and Henry Lake region, on the west side, was reduced to 75 in 1898, and at the present in 1902 did not exceed 25. The herd at the north border of the Park ranges on the Yellowstone and lowest part of the ^{in the vicinity of Gardiner City, Montana,} Gardner River, during winter, its breeding range extending from Block-tail Deer Creek to Soda Butte. This herd is increasing, although many are destroyed by Coyotes: The young, ~~one or two~~ ^{about as frequently near two} in number, are born during the first half of June.

Ovis canadensis

(Sheet I)

Mountain Sheep.

Oct. 5, 1902. — Found skull of ♀ near the top of Bunsen Peak. One of the Government scouts, named Holt, told me that he sometimes saw Sheep about the Golden Gate, at the base of this mountain.

Dec. 7, 1902. — Mr. Peter Holt thinks there are 50 to 75 Sheep wintering on the north side of the Park.

Sept. 11, 1902. — Seven Sheep, 3 does and 4 lambs, were seen close to the road, between 1st & 2d bridge, on the right bank of Gardner River, at an altitude of 5650 feet. They paid no attention to passing vehicles. They were first seen at 2 P.M. At 5 P.M. they had moved up the hill to a rocky hilltop where they looked picturesque. A Magpie came along and alighted on a dry cedar above them and delivered a short lecture before passing on.

Oct. 3, 1902. — One Sheep was seen across the Yellowstone River above the between Eagle and Crevasse creeks.

Sheep were frequently seen on the lower Gardner River ~~down~~ in April and May, 1902. A few came down to the river during the summer, but I saw none until September 11, 1902, when three females and four young were seen grazing beside the Gardner River.

During the summer of 1902, a flock of Sheep on Mount Washburn. My son saw about 30 Sheep about half-way up Mount Washburn the Sunday preceding my visit which was September 24.

Specimens of Ovis canadensis

Ovis canadensis

(Sheet 11.)

Horns and skeletons are commonly seen about the Park.

Oct. 24, 1902.—No Big Horns have been seen on the Gardner River since September 11th.

Many ^{decayed} skulls of Sheep were seen, in 1902, across the Yellowstone River from Gardner and thence to Eagle Creek; also in the foothills of Electric Peak, back from Cinnabar.

Herd of 39 counted in Gardner Canyon at 2-mile post (from ^{Gardner} Cinnabar), altitude 5515 feet, about the end of October, 1902. The day was cold and stormy, the Sheep extremely gentle, and not in the least disturbed by my presence.

Holt and I counted ~~the~~^{the same} herd on the high mesa above this point, November 17, 1902, and found it to number just 40. The rams were rutting, and the flock so gentle that we found it difficult to scatter them enough to enable us to count them with accuracy.

Ovis canadensis

(Sheet III.)

Nov. 6, 1902. — On the Gardner River at the 3-mile Post (altitude 5515 feet), saw 39 Mountain Sheep.

"Buffalo" Jones counted 49. Holt and I counted 40.

They leave Mount Everts about June 1. They have ^{their} young, ~~which are born in June,~~ on Mount Washburn and Specimen Ridge. Old rams often separate themselves from the flocks. Mr. Holt thinks their banding together is for protection. During the winter of 1896-'97, a fresh Sheep was found killed by Mountain Lions on four successive days.

Scouts have found no Sheep that had been killed by Mountain Lions or poachers since 1897; and the Mount Everts flock is slowly increasing. Holt estimates the weight of the largest rams at from 250 to 300 pounds; old females at from 175 to 180 pounds. One or two young are born at a birth, most often two.

Bison bison (Linnaeus). (Sheet I.)

October 14, 1902 to Mr. Lamont relative to the
purchase of a herd of Bison for the Park.

Specimens of Bison bison (Linnaeus).

5419. } Skulls found on the Gardner River, Yellowstone
5420 } National Park, Montana, Nov. 28, 1902.
5421 }

5435. ♂ ad. Found December 14, 1902, at the cabin of Mr. J. W. Hulce, at 8000 feet altitude, on Crevasse Mountain, Park Co., Montana. Presented by Mr. Hulce.

5282. Skull found at Mammoth Hot Springs, Y. N. P., Wyo. in the year 1902.

5283. Skull Ditto

5284 " "

5285 Horn core "

5286 Horn "

Bison bison (Linnaeus).

(Sheet II.)

October 5, 1902. — Came suddenly upon three Bison in the new corral on Glen Creek. The first seen out of a "Zoo." But few remain in the Park. Many old skulls were observed in various localities.

A corral was for a new herd of Bison, introduced from the Good Night Ranch. The fence was completed around this enclosure in September, 1902. Three bulls from Texas were added to the domestic herd, October ²³~~17~~, 1902, making 17 in all.

Sept. 17, 1902. — Several Bison were removed ~~from~~^{in a boat} from an island in Yellowstone Lake, and landed at the Lake Hotel dock, by Colonel Waters, their owner.

Hospital Steward Roepke saw three Bison on Black-tail Deer Creek.

The Bison in the Park prior to September, 1902, were native to the region, and consequently were of the darker-colored mountain form.

Major John Pitotin, U.S.A., Superintendent of the Yellowstone National Park, telegraphed on

?Phenacomys

Three were trapped, ^{during November, 1902,} under logs of which the roadbed through Snow Pass is constructed. All were taken in a spot where Peromyscus texanus subarcticus and Sorex were its neighbors, the altitude being about 6800 feet. The winter coat was prime in November.

Measurements of *Thomomys*?

Collector's
number.

Sex and age.

Date

S. o. a. a. t. y.

5375 ♂ ad. Nov. 9, 1902 Snow Pass, Mammoth Hot Springs, Wyoming.
5395 ♂ ad. Nov. 11, 1902 do
5406 ♀ ad. Nov. 14, 1902 do

| | Length. | | | | | | |
|----------------|---------|----|----|----|----|------|------|
| Tail vertebrae | 165 | 55 | 61 | 22 | 31 | 9 | 13.5 |
| Tail hairs | 168 | 63 | 70 | 22 | 31 | 10.5 | 13 |
| Hind foot | 176 | 60 | 69 | 21 | 32 | 10. | 13. |
| Gl. ad. | | | | | | | |
| Ear crown | | | | | | | |
| Ear notch. | | | | | | | |

? Phenacomys

Oct. 5, 1902. — One of these grayish Mice was seen
on the north slope of Bunsen Peak, Oct. 5, 1902.

Specimens of Mus musculus

| | | |
|----------------------------|---|---------------------------------|
| 5321. ♀ ad. Oct. 28, 1902. | Mammoth Hot Springs, Wyo. | 160; 77; 80; 18.3; 24; 9.5; 13. |
| 5342. ♂ ad. " 29, " | do (End of tail zone) - ; - ; - ; - ; - | |
| 5372. ♀ ad. Nov. 3, " | do (In formalin) - ; - ; - ; - ; - | |
| 5405. ♂ ad. Nov. 13, " | do | 185; 87; 90; 20.6; 26; 12; 15.5 |
| 5408. ♂ ad. " 16, " | do | 155; 72; 75; 17; 23; 10; 13. |
| 5409. ♂ juv. " " " | do | - ; - ; - ; - ; - ; - |
| 5428. ♂ ad. " 28, " | do | 165; 78; 81; 20; 25; 10; 14. |

(Sheet I.)

Specimens of Peromyscus texanus subarcticus J. A. Allen.

| | | | | | | | | | | | |
|------|--------|---------------|-------------------------------|-----|-----|----|------|------|----|------|------|
| 5326 | ♀ ad. | Oct. 28, 1902 | Mammoth Hot Springs, Wyoming. | 156 | 70 | 78 | 21 | 28 | 12 | 16.5 | |
| 5327 | ♂ ad. | do | do | 163 | 67 | 74 | 21 | 29 | 12 | 16.5 | |
| 5328 | ♂ ad. | do | do | 154 | 67 | 74 | 20.6 | 30 | 12 | 16 | |
| 5329 | ♂ ad. | do | do | 161 | 62 | 70 | 20.8 | 29 | 12 | 16.5 | |
| 5330 | ♂ ad. | do | do | 161 | 67 | 74 | 21 | 29 | 12 | 16.5 | |
| 5331 | ♂ imm. | do | do | 154 | 65 | — | 20 | | | | |
| 5332 | ♀ imm. | do | do | 148 | 64 | — | 19.5 | | | | |
| 5339 | ♀ imm. | Oct. 29, 1902 | do | 148 | 64 | — | 20.5 | | | | |
| 5340 | ♂ imm. | do | do | 150 | 64 | — | 20.5 | | | | |
| 5341 | ♀ imm. | do | do | 145 | 60 | — | 20.2 | | | | |
| 5347 | ♀ imm. | Oct. 30, 1902 | do | 154 | 65 | — | 20. | | | | |
| 5354 | ♂ ad. | Oct. 31, 1902 | do | 159 | 66 | 73 | 22 | 30 | 12 | 16.5 | |
| 5355 | ♂ ad. | do | do | 155 | 65 | 72 | 21.5 | 30 | 12 | 16. | |
| 5356 | ♂ imm. | do | do | 154 | 61 | — | 20. | | | | |
| 5361 | ♂ imm. | Nov. 1, 1902 | do | 154 | 65 | — | 20 | | | | |
| 5364 | ♂ ad. | Nov. 2, 1902 | do | 162 | 64 | 70 | 20 | 30.5 | 13 | 17 | |
| 5365 | ♀ ad. | do | do | 162 | 65 | 72 | 21 | 29. | 13 | 16.5 | |
| 5373 | ♀ imm. | Nov. 3, 1902 | do | 160 | 63 | — | 21 | | | | |
| 5374 | ♂ imm. | do | do | 153 | 65 | — | 21 | | | | |
| 5377 | ♂ ad. | Nov. 9, 1902 | Snow Pass, | do | 165 | 67 | 75 | 21 | 30 | 14 | 18 |
| 5378 | ♂ ad. | do | " " | do | 163 | 69 | 78 | 22 | 29 | 14 | 16.5 |
| 5379 | ♀ ad. | do | " " | do | 155 | 68 | 75 | 20.5 | 28 | 13.5 | 17 |
| 5380 | ♀ ad. | do | " " | do | 161 | 68 | 75 | 21 | 29 | 13 | 16.5 |
| 5381 | ♀ imm. | do | " " | do | 150 | 64 | — | 20 | | | |
| 5382 | ♀ imm. | do | " " | do | 155 | 67 | — | 21.5 | | | |
| 5383 | ♀ imm. | do | " " | do | 151 | 63 | — | 21 | | | |
| 5387 | ♂ ad. | Nov. 10, 1902 | " " | do | 165 | 66 | 73 | 20.7 | 29 | 12 | 16 |
| 5388 | ♀ ad. | do | " " | do | 172 | 72 | 80 | 20 | 29 | 13 | 17 |

(Sheet I.)

Peromyscus texanus subarcticus J. A. Allen.

(over)

Peromyscus texanus subarcticus J. A. Allen. (Sheet II.)

One of the most abundant mammals in the vicinity of the Mammoth Hot Springs. It probably ranges throughout the Park; but its ascertained limits were from Cinnabar, Montana (5255 feet) up to Snow Pass, Wyoming (7000 feet). It was ascertained from the scouts and soldiers that mice of this genus are troublesome in all of the cabin stations of the Park. It is possible that more than one species of *Peromyscus* inhabits the region.

(over)

Specimens of Deromyscus texanus seebachicus G. O. Allen.
(Sheet II.)

Neotoma (Leonomus) cinerea? (Shat I.)
Mountain Rat. Trade Rat.

April 24, 1902. — One was seen that had its nest among some broken rock at the mouth of the Boiling River.

Some were killed at Mammoth Hot Springs, by Judge Meldrum and others.

At Gardiner City and Crevasse Mountain, in Park Co., Montana, they are also common.

Dec. 1, 1902. — "I send you [from Gardiner City, Montana,] a Mountain Rat, Pack Rat, Trade Rat."

(Signed). "E. Hofer." Specimen no. 3 ad., Dec. 14, 1902.
This animal was kept in confinement about a ^{fortnight} week. It would eat almost anything, but preferred raw onions. It had the peculiar habit of stamping with its hind feet, and of nervously working its lips and wiggling its whiskers. Length, 380 mm.; tail vertebral, 170; tail to end of hairs, 205; hind foot, 44; head, 57; ear from crown, 26; ear, from notch, 32.

I saw a ^{of one} ~~the skin was seen at J. W. Hulse's cabin, on Crevasse Mountain, Park Co., Montana at the~~ at the skin was seen at J. W. Hulse's cabin, on Crevasse Mountain, altitude 8000 feet, where they are not uncommon. Another was received from Mr. E. Hofer, taken at Gardiner City (altitude 5300 feet).

"Rats" were numerous and troublesome at the Canyon Hotel in 1902. In store at Gardiner City, Montana Oct. 13, 1902. In the houses of Holt and Morrison (several) and of Judge Meldrum.

Specimen of Neotoma (Leomys)

No. 5434, ♂ ad., December 14, 1902, Gardiner City, Park Co., Montana. Sent me by Mr. E. Hafer. Length, 380 mm.; tail vertebræ, 170; tail to end of hairs, 205; hind foot, 44; head, 57; ear from crown, 26; ear from notch, 32.

Microtus

Compare the skulls of Nos. 5322 and 5325, ^{With both} ~~for the flesh~~
^{(no. 5325);}
I made the following comparison: Of the latter "Belly yellowish.
Tail shorter and more sharply bicolored. Ear smaller. Muzzle
heavier." They are probably the same species, but should
be carefully compared.

These animals were often seen running about during
the day. They were sometimes taken in traps between my
morning and evening visits.

Dr. Merriam reported Arvicola riparia from
the Lower Geyser Basin, in 1872.

My son saw a small ^{perhaps this species,} Arvicoline rodent,
at the base of Mount Washburn, in September, 1902.

Specimens of Microtus

Date

Collector's
number.

Sex and age.

Locality.

| Collector's number. | Sex and age. | Date | Locality. | Length. | Tail vertebrae |
|---------------------|--------------|---------------|--|---------|----------------|
| 5322 | ♀ ad. | Oct. 28, 1902 | Marsh at Mammoth Hot Springs, Wyoming. | 165 | 41 |
| 5323 | ♀ imm. | do | do | 44 | 20 |
| 5324 | ♀ juv. | do | do | 20 | 32 |
| 5325 | ♂ ad. | do | do | 19.5 | 10 |
| 5331 | ♀ ad. | Oct. 29, 1902 | do | 131 | 32 |
| 5337 | ♀ ad. | Oct. 29, 1902 | do | 138 | 34 |
| 5338 | ♀ juv. | do | do | 37 | 18 |
| 5344 | ♀ juv. | do | do | 19.5 | 13.3 |
| 5353 | ♀ imm. | Oct. 31, 1902 | do | 138 | 35 |
| 5357 | ♀ imm. | do | do | 128 | 30 |
| 5358 | ♀ ad. | Nov. 1, 1902. | do | 135 | 31 |
| 5359 | ♂ imm. | do | do | 169 | 43 |
| 5360 | ♂ imm. | do | do | 50 | 20 |
| 5366 | ♂ ad. | Nov. 2, 1902 | do | 32 | 8 |
| 5367 | ♀ imm. | do | do | 20 | 14 |
| 5368 | ♀ imm. | do | do | 20 | 14 |
| 5371 | ♀ juv. | Nov. 3, 1902 | do | 145 | 37 |
| | | | | 20 | 20 |
| | | | | 144 | 40 |
| | | | | 145 | 42 |
| | | | | 20 | 20 |
| | | | | 152 | 47 |
| | | | | 20.8 | 32 |
| | | | | 11 | 14 |
| | | | | 135 | 33 |
| | | | | 20 | 20 |
| | | | | 138 | 34 |
| | | | | 20.5 | 16 |

Fiber

Muskrat.

Mr. Holt saw them in Nez Percey Creek; on Fire Hole River; Yellowstone River; Pelican Creek; Snake River; Gibbon River (=head of Madison River); Madison River.

At Norris they are often seen floating down the Gibbon River. Mr. Holt does not remember seeing any Muskrat houses in the Park, but thinks them all "Bank" Rats. The color, Holt says, is light.

Evotomys

Six were ~~taken~~^{obtained} at Snow Pass, above the Mammoth Hot Springs, at the altitude of nearly 7000 feet. All were taken during November, when the ground was covered with snow, in traps set beneath logs and roots of trees, in a forest of lodge-pole pine, Douglas spruce, Abies, and Picea.

Specimens of Eudotomys

Collector's
number.

Sex and age.

Dath

Reed & Clegg

Length.

Yail vertebræ

Tail hairs

Hind foot

Brad

Ear crown

Ear notch

| Collector's number. | Date | Collector | Length. |
|------------------------|----------------|--|----------------------------|
| 5376 ♀ | Nov. 9, 1902 | Show Pass, Mammoth Hot Springs, Wyoming. | 130 38 45 18 2.7 8 14 |
| 5385 ♀ | Nov. 10, 1902 | do | 125 35 42 18 2.6 8 13 |
| 5399 ♀ | Nov. 12, 1902. | do | 125 35 41 18 2.6.5 10 14 |
| 5400 ♂ ad. | do | do | 133 40 48 18.5 2.7 10 14 |
| 5401 ♂ ad. | do | do | 134 41 48 18 2.6.5 10 14 |
| 5402 ♀ | do | do | 130 36 45 18 2.7 10.2 14.3 |

(Sheet I.)

Sciurus hudsonicus baileyi J. A. Allen.

Very numerous from M. H. S. to the Lower Geyser Basin, July 27, 1889. [The only Tree Squirrel in the Park].

July 28, 1889. - At the Upper Geyser Basin. It climbs nimbly and swiftly from limb to limb, inspecting each cone of the Lodge-pole Pine, apparently smelling of it, until it discovers one in which the seeds are right, when it quickly cuts it off. I saw one chase a Callospermophilus up a spruce tree to the very top. The latter beat a speedy retreat to the ground as soon as it got a chance.

July 29 and 30, 1889. - These Squirrels were fed at the Canyon Hotel, and became very bold. When hiding food received from the cooks, the Squirrels were much annoyed by pilfering birds, called "camp robbers" (Perisoreus canadensis capitalis).

Oct 6, 1902. - Several were seen near the summit of Bunsen Peak, where they had fed extensively upon the seeds of the Douglas spruce and Pinus albicaulis.

Sept. 17, 1902. - Numerous at Lone Star Geyser.
" 18, " . - " " " Yellowstone Lake.

Specimens of Sciurus (Tamiasciurus) buckleyi Bailey. J. A. Allen.

| Collector's number. | Sex and age. | Date. | Locality. | Length. | Tail, vertebræ. | Tail, hairs. | Hand foot. | Head. | Ear, crown. | Ear, notch. |
|------------------------|----------------|--|------------------------|---------|-----------------|--------------|------------|-------|-------------|-------------|
| 162 ♂ 1 mm. | July 5, 1902. | Crowley Nat., near Gardiner, Park Co., Montana (8,000 feet) | Louisiana Pine Marten. | 347 | 142 | 196 | 54 | 58 | 15 | 26 |
| 5346 ♂ ad. | Oct. 30, 1902. | Mammoth Hot Springs, Wyoming | do | 330 | 130 | 175 | 62 | 64 | 15 | 25 |
| 5394 ♀ | Nov. 10, 1902 | do | 323 | 130 | 185 | 50 | 66 | 13 | 23 | |

(Sheet II.)

Sciurus (Tamiasciurus) hudsonicus baileyi J. A. Allen.

Oct. 11, 1902. - Abundant at M. H. S. Very busy gathering stores of food for winter.

Oct. 12, 1902. - Now unusually active in harvesting spruce and pine cones for winter provision.

Oct. 17, 1902. - Abundant at M. H. S. & Snow Pass.

Oct. 20, 1902. - About Stygian Cave they were numerous, busy, tame.

Very abundant in coniferous woods throughout the Park. In September, 1902, it was feeding on the seeds of Pseudotsuga at Ft. Yellowstone. Some were so tame as to come to the hospital kitchen, where they were fed quite regularly. Heaps of cones of Pseudotsuga and Pinus flexilis several feet deep were found around the trunks of trees about Mammoth Hot Springs and elsewhere in the Park. It builds nests much like those of the eastern Red Squirrel, often in the Douglas Spruce.

October 24, 1902. - Very busy, gleaming, and exceedingly tame.

In November they were feeding on the Douglas Spruce and were rarely tempted by the oatmeal or apple with which my traps were baited. Mr. Peter Holt informed me that very many of these beautiful Squirrels are eaten by Lynxes and Mt. Lions.

Eutamias (?minimus)

(Sheet I.)

Exceedingly abundant everywhere from W. H. S. to the Lower Geyser Basin, July 27, 1889.

From the Lower to the Upper Geyser Basin, July 28, 1889, it was everywhere abundant. The young were then about half grown.

Oct. 5, 1902. — Hundreds were seen on Bunsen Peak, some singing as high as 9000 feet. Louis killed 2 with a bear-shooter. One was found almost at the summit of the mountain which rises to 9,000 feet. On a lumber pile at an recently-abandoned camp, where many horses had been feed, dozens of these beauties were scampering about, busily carrying off the scattered grain to their homes among the rocks of the mountain slope above.

April 19, 1902. — Seen from Gardiner River at 5,600 feet altitude up to Mammoth Hot Springs. It feeds on the fruit of the wild rose and red juniper.

September 17, 1902. — Numerous at the Lone Star Geyser.

September 18, 1902. — Numerous at Yellowstone Lake.

Oct. 11, 1902. — Abundant and busy, at W. H. S., getting ready their winter stores.

Oct. 12, 1902. — Now unusually active in harvesting pine and spruce cones for winter provision.

Oct. 17, 1902. — Abundant at W. H. S. & Snow Pass.

Oct. 20, 1902. — About Stygian Cave, numerous, busy, tame.

Oct. 13, 1902. — Many out at W. H. S.

" 24 " . — Abundant

When the snow came all disappeared for a time; but several came out on November 16, 1902.

Specimens of Cetomys

Length
5305. ♀ ad. Brown Peak, Y. M. P., Oct. 5, 1902. 205; 93; 115; 33; 37; 11; 17 mm.
5306. ♂ juv. do. 188; 82; —; 31; —; —; —.
5345. ♀ ad. Mammoth Hot Springs, Wyo. Oct. 29, 1902. 230; 105; 135; 34; —; 12; 16.
5363. do. Nov. 1, 1902. 216; 95; 118; 33; 38; 11.3; 17.

Eutamias

(Sheet II.)

Common throughout the drainage basin of the Gardner River and its tributaries, and probably throughout the Park. It is commonly seen about horse manure on all the roads of the Park. It remained active through September and most of October, disappearing for ~~some time~~ after the snow falls of October; but ~~as~~ several came out to feed on November 16.

Spermophilus (Callospermophilus)

Several were seen between M. H. S. and the Lower Geyser Basin, July 27, 1889.

July 28, 1889. — Common at the Lower Geyser Basin and thence to the Upper Geyser Basin.

Sept. 15-20, 1902. — Made the tour of the Park. None were seen; and none were noted later at M. H. S.

Abundant throughout the higher portions of the Park, down to within about a mile of the M. H. S. on the Golden Gate road, ranging from about 6700 feet upward.

~~It is quite numerous~~ In making the tour of the Park it is usually seen soon after leaving the ^{first} ~~first~~ mile ^{post} (6635 feet), and has become quite numerous by the time the second mile-post is reached at 6927 feet altitude. Since it is seen everywhere in wooded country; but it avoids the open country. At the Golden Gate they ^{are} ~~may~~ always be seen feeding in the road, only stepping aside far enough to let the coaches pass when the horses are close upon them. The true Chipmunks, of the genus Eutamias, are frequently seen feeding with them in the roads.

Spermophilus (? armatus Kennicott.) (Sheet I.)

"Gray Gophers" were "abundant between Mammoth Hot Springs and the Golden Gate" [on the old "lower" road].

April 24, 1902. — Abundant at M. H. S. Its note is a bird-like twitter.

June 10, 1902. — An adult female was taken from an immature Red-tail, near the 4-mile post on Swan Lake Flat.

Observed from April 22 to September, 1902. It hibernates early. Not seen much later than the beginning of September. Exceedingly abundant from the mouth of the Gardner River to Swan Lake Flat (5300 to 7300 feet altitude), and east of Mount Everts.

A specimen was taken from a Red-tailed Hawk near the 4-mile post on Swan Lake Flat (altitude 7253 feet), on June 11, 1902, skinned and preserved a specimen.

Oct. 14, 1902. — I found one, ^{when found} sometime dead, and partly eaten, in front of the guardhouse at Fort Yellowstone, ~~post~~, October 14, 1902.

Specimens of Spermophilus

5249. ♀ ad. June 11, 1902. Four-mile fort, Bear Lake
Hill, 8,200', Wyoming. 330; 83; 113; 46; -; -; - mm.
5250. ♀ ad. Oct. 14, 1902. Ft. Yellowstone, Wyoming. 300; 80; 117; 43.5; 52; 10; 17 mm.

Arctomys flaviventer Audubon and Bachman.
Groundhog.

Abundant between M. H. S. and the Lower Geyser Basin,
July 27, 1889.

April 19, 1902. — The first of the season was noted
on the Gardner River, in Y. H. P., ~~Wyo~~ Montana;
Apr. 19th and the next Apr. 22nd., at 5500 ft altitude.

September 19, 1902. — One was seen beside Yellowstone
Lake. None had been seen abroad at M. H. S. for
some time previously.

Aug. 10, 1902. — One seen at Elk Park.

Extremely abundant throughout the Park, from
near Gardiner City, where I saw one as early as
April 19, 1902, to the Yellowstone Lake. As a rule they
hibernate early in September, although I saw one ^{out,} at
Yellowstone Lake, as late as September 18, 1902.

(over)

Specimens taken: —

No. 163, collection of Louis di Zerega Mearns. Male,
July 20, 1902. Crevasse Mountain, Park Co., Montana.
Length $13\frac{1}{2}$ inches; tail vertebral, $4\frac{3}{4}$; hind foot, $1\frac{7}{8}$.

? Thomomys clusius Coues.

A species of Thomomys was found at Mammoth Hot Springs and Lower Falls, and its mounds were seen almost everywhere in the Park. At Lower Fall, 1902, one came out of its burrow, several times, while the sun was brightly shining. Rain fell heavily on the following day. I have several times seen Pocket Gophers, out of their burrows — a rather unusual occurrence — just before a heavy fall of rain.

Mounds of this creature were observed almost up to the summit of Bunsen Peak (9,000 feet altitude) on October 5, 1902. Freshly-raised mounds were noted at the Mammoth Hot Springs as late as October 24, 1902.

Mr. Peter Holt has found food in the cheek-pouches of this animal.

(Sheet I.)

Lepus (Sylvilagus) baileyi Merriam.
Bighorn Cottontail.

A Cottontail was noted near the Fountain Geyser, July 28, 1889. It is uncertain whether this is the same as the cottontail obtained along the ~~northern~~ border of the Park, at a much lower altitude, and in open country.

April 24, 1902. — Cottontails were found on the Gardner River at the altitude of 6000 feet.

Dec. 13, 1902. — ^{in a thicket} One beside the Gardner River, at 5600 ^{feet.}

Dec. 16, 1902. — On the Gardner River.

Oct. 23, 1902. — Shot 5 across the Yellowstone from Gardiner.

Oct. 3, 1902. — Shot two and saw many Cottontails across the Yellowstone River from Gardiner City.

This Cottontail is abundant from ~~5100~~ the Yellowstone Valley, at Horr, Montana, up to the upper border of the Mammoth Hot Springs mineral "formation" (5100 to 6700 feet). A cottontail was also noted July 28, 1889, near the Fountain Geyser (altitude about 6900 feet). It is uncertain whether this Cottontail is the same as that found below the belt of Murray pine; and it is possible that I mistook a young Snow-shoe Rabbit for a Cottontail, as no others were seen by either Mr. Holt or myself higher than 6900 feet.

Specimens of Lepus baileyi Merriam.

| | Sp | Length. | Widest | hind foot | ear | Crown | Can. mouth |
|-------------|------------------------|---------------|---------------------------------|-----------|-----|-------------------------------|-------------------------------|
| 5307. ♂ ad. | Neu. Gardner C., Mont. | Oct. 3, 1902. | 370; 60; 90; 95; 80; 71; 61 mm. | | | | |
| 5308. ♂ ad. | — | — | do | — | — | do | |
| 5309. ♀ ad. | — | — | do | — | — | do | |
| 5310. ♀ ad. | — | — | do | — | — | do | |
| 5311. ♀ ad. | — | — | do | — | — | do | |
| 5312. ♂ ad. | — | — | do | — | — | do | |
| 5313. ♀ ad. | — | — | do | — | — | do | |
| 5314. ♀ ad. | — | — | do | — | — | do | |
| 5315. ♂ ad. | — | — | do | — | — | do | |
| 5316. ♀ ad. | — | — | do | — | — | do | |
| 5317. ♂ ad. | — | — | do | — | — | do | |
| 5318. ♀ ad. | — | — | do | — | — | do | |
| 5429. ♂ ad. | Eagle Creek, | do | — | — | do | 400; 60; 82; 98; 77; 73; 61 " | |
| | | | | | | Nov. 29, 1902. | 375; 50; 80; 90; 77; 68; 59 " |

Lepus baileyi Merriam.

(Sheet 11.)

A Western Red-tail killed one in Meldrum Gulch,
September 26, 1902.

Extremely numerous on the rocky banks of the
Yellowstone River, where they appear in numbers
among the sagebrush,
towards evening, being seldom seen in daytime.

Several shot October 13, 1902, were in prime coat
except between the fore limbs, between hind limbs, and
on under side of ~~head and~~ neck.

Hair shot on Eagle Creek, Oct. 23, 1902. They were more
nearly prime than those shot Oct 13, but still were molting between
fore limbs, between hind limbs, and on under side of neck.

Lepus campestris Bachman.

April 19, 1902. — One in gray ^{summer} coat seen at Horr, Park Co., Montana (altitude 5150 feet).

April 24, 1902. — Several seen at the altitude of 6000 feet on the Gardner River, Yellowstone National Park, Wyoming, that were still ⁱⁿ nearly complete winter coat of white.

Dec. 13, 1902. — Sitting doubled up under cedars at 6000 feet altitude. All white winter pelage.

Dec. 16, 1902. — On the Gardner River.

Dec. 17, 1902. — One at M. H. S. Not yet changing to white. (altitude 5150 feet)

April 19, 1902. — One, seen at Horr, Park County, Montana, was in summer coat. Others, at Fort Yellowstone (altitude 6200 feet), still retained some of the white winter pelage. (altitude 6000 feet)

On the juniper flats below the M. H. S. (the change to the white winter pelage took place in October.)

By the middle of November all were white.

Nov. 1, 1902. — Lepus campestris is not yet white. One moderately scared cleared eleven feet at a bound, in light snow, November 16, 1902. Where they had been running about at night, near my quarters at Fort Yellowstone, their leaps were about seven feet, which is probably near their average when not frightened; but I think I have seen tracks almost as much as twenty feet apart where a coyote had chased one down a slope.

Specimens of Lepus campestris Bachman.

5319. ♀ Oct. 25, 1902. Animas, Montana. 585; 135; 190; 96; 140; 112; 780; 900.
5410. Bad. Mts. 23. 1902. Head of Glen Lorus (Wyoming) 660; 130; 205; 108; 136; 112; 855; 980.
More to eye, 62; diameter of eye, 19. All white but ears, nose, and a
patch over each eye. Legs yellowish brown. Lower back shading to
horn color at tip. Weight $7\frac{1}{8}$ lbs. anomalous.

Hand length
Tail, vest
Tail, hairs
Head
Ear, crown
Ear, notch
Ext. of fore and
hind limbs.
Ext. of fore and
hind limbs.

19. Lepus americanus barclii.

The Hare that is abundant at Mammoth Hot Springs is supposed to be this form.

Very tame; feeds in hospital yard. Some were still almost all white late in April, 1902, at M. H. S.

All gray September 19, 1902. Changing to white on inner face of ears and near tail, Oct. 12, 1902. Ground bare, except one day.

One all white Nov. 16, 1902.

20. *Lepus campestris* Bachman.
A hare, supposed to be this one,
was seen at Horr, Montana,
April 19, 1902.

Several all white at M. H. S. Nov. 16.
One moderately scared cleared 11 feet
at a bound in light snow, Nov. 16, 1902.
When they had been running at night about
our house their leaps were 7 feet which is
probably the ordinary length when not
frightened.

Lepus americanus bairdii (Hayden).

Snow-shoe Rabbit.

Abundant above 6000 feet. It does not loose all of the white winter coat before the end of April. Some were changing to white on October 12, 1902; and on November 1, 11 and ¹² ~~13~~ ^{had acquired all of the} bairdii, some were seen that appeared to ~~be~~ ^{be} entirely white white winter pelage.

The following is from the facile pen of ~~Doctor~~ C. Hart Merriam*:

"One very curious fact relating to Lepus bairdii is that all the males have teats and take part in suckling the young. I say all the males, because four out of five specimens procured were adult males, and all had large teats full of milk, and the hair around the nipple was wet and stuck to it, showing that they were then nursing their young." ^{This is followed by} Then follows a surgeon's certificate "verifying the above statements."

* Sixth Annual Report of the U. S. Geological Survey of the Territories, by F. V. Hayden, 1873, pp. 667 and 668.

Ochotona

Mr. Holt saw "Pikas" along the Gardner River, and around the Rison corral, in Nov. & Dec., 1902. They were not bleating at this season.

I saw them among the rocks at Silver and Golden Gate, and on the lower Golden Gate road (during the period from June to September, 1902.

Mr. Peter Holt saw them at the Post Garden, on the Gardner River, as low as 5600 feet, November 17, 1902.

Erethizon epixanthum Brandt.

Yellow-haired Porcupine.

Porcupines were numerous in the Park at the time of our visit, in July, 1889. One was found dead at the Canyon Hotel on our arrival, July, 28th. The hotel people complained of being somewhat annoyed by the familiarity of these beasts.

September 19, 1902. - One was seen on a rocky hillside at Yellowstone Lake (altitude 7,000 feet).

In July, 1889, several were seen near the hotel at the Grand Canyon. In 1902 Porcupines were reported to be scarce. Some remain about the base of several rocky peaks east of Mt. Everts, on Turkey Pen trail.

Merriam obtained this species at Henry Lake.

Specimens.

No. 5415. Quills removed from the flesh of a Mountain Lion. Envelope containing quills taken from the flesh of a Puma (No. 5411), killed November 25, 1902, at the Gardiner River, Yellowstone National Park, Montana.

(Sheet I.)

Castor canadensis frondator Mearns

Sonoran Beaver; Broad-tailed Beaver.

A pair of old ones with two young were observed by a party of tourists, including myself, on Fire Hole River, Lower Geyser Basin, July 27, 1889, at evening. Both old and young were swimming freely about, the young sometimes climbing upon the mother's back. A third young one was dead beside the stream, having been accidentally killed by a child who threw a stone.

Dec. 7, 1902, Mr. Peter Holt said: "On all streams bordered by willows. They are increasing rapidly. They number thousands. At Virginia Meadows the dam broke, and road workmen supplied the Beavers with brush for its repair, which they would use overnight. This was in November, 1902.

At Soda Butte I saw a Beaver turn a drifting tree-trunk at right angles to its course, and lodge it in an opening across the stream and then pile brush around. They are tame there, and easy to observe on moonlight nights.

Beaver skins sell for \$4⁰⁰ per pound, and average 2 lbs. to the skin."

"Wyoming and Montana State laws prohibit the trapping of Beavers in those states.

All are "Bank Beavers" on the Gardner River. There are Beaver houses on Beaver Lake, at Yancey, Soda Butte, the small lake between Bunsen Peak and the Gardner River, at the heads of Cascade and Antelope creeks.

On visiting the house at the head of Cascade Creek, the Beavers immediately leave and commence splashing in the lake.

The Park Beavers subsist of the bark of the willow, quaking aspen, and narrow-leaved cottonwood. Mr. Holt thinks that all of the pines, ^{trees} cut by them are intended for the construction of dams and not for food.

Specimens of Castor canadensis frondator Mearns.
Broad-tailed Beaver.

No. 5433. Two lower jaws from Swan Lake Flat, Y. N. P.,
Wyoming, found June 11, 1902. The animal was eaten
by a Puma (Felis oregonensis hippolestes).

Castor canadensis f. fondator Mearns

Beavers have become numerous on ~~practically~~ most of the streams of the Park. Dozens of them were seen at Soda Butte, in September, 1902. On September 24, 1902, I saw a Beaver house and dam on Antelope Creek, at the base of Mount Washburn that must have been about 8300 feet above sea level.

Dams and houses are on Beaver Lake; also many on Fire Hole River. Near the mouth of the Gardner River many narrow-leaved cottonwoods were cut during the summer of 1902, ~~at~~ ^{as low as} 5300 feet altitude.

During July, ~~1889~~ 1899, at Fire near the old Fountain Hole, a small boy threw a stone with no thought of harming the creature, but killed a Baby Beaver ~~that~~ as it swam past in the Fire Hole River.

I noted that it was "feeding extensively" on the Murray pine, on the Fire Hole River, in 1902, as I saw many large trees felled by Beavers; but Mr. Holt thinks these trees are never eaten but are felled ~~simply~~ solely for use in building dams.

I saw several dams across the Gibbon River above Virginia Cascades, September 24, 1902; and there were many dams across Willow Creek. Mr. Holt tells me that Beavers are numerous on Black-tail Deer Creek.

Vulpes macrourus Baird.

I found one that had been poisoned by the scouts at the Mammoth Hot Springs, and sent its skull to the U. S. National Museum.

Miss Jackson showed me an excellent photograph of one, taken near one of the cabins. This ~~is~~ Fox is abundant in the Park, where I sometimes saw them, and also found tracks of them on Eagle Creek, Park Co., Montana, October 13, 1902.

Holt says: "Abundant. They burrow in a manner similar to the Coyote. They come about stations and pick up scraps of food at night, and even in daytime. Not as shy as Coyotes about visiting camps and cabins. Food: Rabbits, grouse, & mice, which latter it catches in the sloughs. Holt frequently meets with this species in his journeying. Both the Fox and Coyote harm grouse nests when the chicks are young."

Specimens of Vulpes macrourus Baird.

5297. - ad. Skull of an individual poisoned at the
Mammoth Hot Springs, Yellowstone National Park,
Wyoming, during the winter of 1901-'02.

5298. - ad. Pair of mandibles Ditto.

Canis griseus (Sabine).

Rare in the Park. Captain Clittenden considers it very rare. Peter Holt, the scout, has never seen one in the Park. I saw what I firmly believe to have been a Timber Wolf, on , 1902, at a small pond near the six-mile post, beyond Devil's Lake Flat.

Canis lesto Merriam.

A female (No. 5404) weighed 21 lbs., avandupois. Abundant throughout the Park, following the big game to the higher portions in summer and descending with them in autumn. In September they return to the Mammoth Hot Springs, where their voices are regularly heard at night until the poisoned baits set out by the Scouts begin to lessen their numbers and make the survivors less bold.

On ^{Nov. 17}, 1902, when driving near the ^{Novis} Basin, I saw a Coyote come out of a dense forest ^{fir, spruce, and} of lodge-pole pine into the road, with its nose close to a rabbit trail that it was following through devious windings at length on into the woods on the opposite side.

One shot by Peter Holt, Nov. 17, 1902, was five feet in length of the fresh skin. In November many places were seen where Coyotes had been digging for mice, usually in sagebrush country. They also dug out rabbits from their burrows.

Measurements of Canis leucurus Mearns.

| | | |
|---------------------------------------|------|-----|
| Weight, pounds <i>Canis leucurus</i> | 21 | — |
| Tail length | 1300 | — |
| Tail vertebræ | 355 | 350 |
| Tail hairs | 435 | 460 |
| Hind foot | 185 | 195 |
| Head | 204 | 215 |
| Ear above crown | 100 | 112 |
| Ear above nostril | 102 | 120 |
| Diameter of eye | 14.5 | — |
| Width of chest | 430 | — |
| None to angle of mouth | 100 | 96 |
| None to eye | 91 | 100 |
| None to ear | 180 | — |
| None to end of outstretched hind limb | | |

No. 5300. Weathered skull, without mandibles. Adult. Found. Nov. 2, 1902.

No. 5404. ♀ ad. Mammoth Hot Springs, Wyoming, Nov. 13, 1902. Skin with skull.

No. 5412. ♂ ad. Gardner River, Montana, Nov. 25, 1902. Skin with skull.

No. 5427 ♂ ad. Gardner River, Y. N. P., Montana.

Nov. 17, 1902. Skin with skull.

No. 5432. Lower jaw found at M. H. S., Wyo., April 29, 1902.

No. 5294. Skull found at M. H. S., Wyo., Spring of 1902.

" 5295

" 5296

" 5302

" 5300

Canis festes Merriam.

(Sheet II.)

When travelling through a sagebrush country, ^(the) ~~not~~ coyotes, if taken unawares, may be seen slinking behind the nearest sage bush where it lies with its head amongst the branches, ~~which~~, ^{and,} ~~if~~ ^{pointed} (it were not for its ears, ~~that~~ the creature would be invisible even at a short distance. I have seen ~~them~~ ^{Coyotes} following Antelope with loud baying, like ~~as~~ dogs, and supposed that they were driving them with some hunting purpose in mind, perhaps trying to drive them into some trap or ambush, which the scouts say they are quite clever enough to plan.

Lynx

I saw no Lynx in the Park; but Holt and I followed a track in the snow at Snow Pass. The track is not so round as that of a Felis, being more pointed anteriorly, and without the circular alignment of the pads. The one we followed often stood up upon ^{stood up} logs, or against the trunks of trees on hillsides.

Holt has never known any Lynx to attack a Deer. He says they feed upon Red Squirrels, Rabbits, grouse, Mice, etc.

Holt says ^{Lynxes} they are very numerous in the Park. They are most abundant where Rabbits are the thickest. Between the Fountain Geyser and Gibbon River is a favorite resort. Food: Rabbits, grouse, Squirrels, and smaller animals. Holt does not know of an instance of their having killed a Deer, although they are sometimes said to do so.

In February Holt saw one just north of Obsidian Cliff. It was couching in the snow when shot at.

(Sheet I)

Lelis oregonensis hippolestes (Merriam).
Rocky Mountain Lion.

During the winter of 1900-01, tracks of a Mountain Lion were seen by a ^{member of the} Hospital Corps at Mammoth Hot Springs, who returned for a companion, after which the trail was followed by the two men, ~~men~~, who soon came upon the body of a Mule Deer that had just been slain by the lion. The latter ~~lion~~ disappeared, and the Deer was secured for the table.

Scouts are ^{sometimes} detailed to kill Lions that follow the Park Deer ^{or} Sheep, in winter. A scout named Morrison killed a mother and four half-grown Lions in one spot, near the Gardner River. In the same locality, Peter Holt and I trailed ^{and shot} a female Lion, 1902. This individual (no.) was sent to the U. S. National Museum. It had killed a fully grown male Coyote, ^{after eating about one-quarter,} and carried the remainder to the point where we came up with it.

October 13, 1902.- Found an old den in a cave on Eagle Creek, where two small Elk and a number

Measurements of Felis rufogrenensis hippolestes (Merriam).

Collector's number.

Sex and age.

Date

Locality

Length.

Tail vertebrae

Tail hairs

Hand foot

Head.

Ear crown

Ear notel

Tip of nose to angle of mouth.

Tip of nose to eye

Tip of nose to ear

Tip of nose to end of outstretched hinder extremity.

Distance between tips of extended fore and hind limbs ^{Weight} lbs. _{Alviro.}

Weight of animal at shoulder

Weight of animal at hip

Girth of neck

Girth of chest

Girth of loin

Distance between eyes

Girth of head in front of ears

Distance between ears

Distance from shoulder to hip.

5411 ♀ ad. Nov. 25, 1902.

Glacier Park
Montana

* 1825 725 790 270 220 80 98 80 70 166 1690
79³/₄ 310 640
630 720 660 550 50405 100 680

* Total vertebræ measured after skinning, 760 mm.
Wight, 29 $\frac{3}{4}$ lbs. Alvar.

Felis *oregonensis* *hippolestes* (Merriam). (Sheet II.)

of heads of beef cattle, from a neighboring slaughter pen, had been carried and devoured.

Holt and I followed ^{their} trails at M. H. S., Nov. 15 and 18, 1902. On Nov. 17, 1902, several were tracked east of Mt. Evans, on the Turkey Pen trail, and on the Gardner River.

Holt has taken a fresh trail and followed it rapidly, for thirty miles without coming up with the Lion.

Lions kill many Mountain Sheep, destroying those that stray from the flock and approach too near the canyons in which the Lions are concealed.

Holt thinks 3000 to 4000 would be a fair estimate of the number of Mountain Lions in the Park provided the number of tracks be made the basis of comparison with the game animals; but, as a matter of fact, the distances traveled by ^{the} ~~in search of its prey~~ Pumas are enormous; and a small number of them will ~~at all~~ leave a prodigious number of tracks in a few days. Holt states that the number of Lion tracks seen when making his snow-shoe trips

Felis oregonensis heppoletes (Merriam).
 in the Park;

is enormous. Holt thinks that Rabbits and Grouse are the ~~the~~ principal food of the Puma; but many Red Squirrels are ^{caught and} eaten by them. Holt does not know personally of an instance where old Elk bulls have been killed by them, although he has seen where they have feasted on dead ones. They slay many Deer and Mountain Sheep; but Holt does not recall an instance where Antelope have been killed by them. Holt has never seen the nest or young of this Puma. Holt once saw a very large male ^{lying on a rocky hill in the Cow pasture,} running a mile from the post of Fort ~~Hancock~~ Yellowstone, sunning itself soon after sunrise. Holt charged his horse towards the Lion; but this only had the effect of making the beast swing its tail in anger; and so it was left in possession of the field where found.

During the winter of 1897-'98, ^{when the snow lay deep on the Gardner}, a scout named Morrison shot five Lions — a mother and four cubs — under a pine tree. A photograph of the group, when dead, was given me.

Felis oregonensis hippolutes (Merriam). (Sheet IV.)

A youngish female, in good flesh, killed November 25, 1902, weighed $79\frac{3}{4}$ pounds avoirdupois. Its fur was matted with lumps of the wild liquorice (Glycyrrhiza lepidota Pursh). Quills of the Porcupine were found in the head, neck, and all of the limbs. Some were deeply imbedded in the leg, one quill having penetrated the tibia and set up an osteitis. The feet contained many quills. Some were taken out and preserved in an envelope (No. 5415). This Puma had carried a ^{fat male} Coyote a long distance, after eating a portion of it. By following the bloody trail in the snow Holt and I came up with the Lion which we killed, and secured both ~~the~~ it and the Coyote for specimens.

Ursus americanus Pallas.

One came to the Fire Hole River, near the old hotel at the Lower Geyser Basin, about sundown, July 27, 1889, and hauled an old hide of some large animal from the place where he had cached it, and, dragging it ashore proceeded to make a meal of it. A party of tourists watched from the opposite bank of the stream.

I saw one at Snow Pass, near the M. H. S., September 1902.

A cub was treed on Sulphur Creek, at the base of Mt. Washburn, September 24, 1902. I hit it with a stone.

Several were noted by me at the Upper and Lower Geyser basins, and at the Lake Hotel, in 1890.

At the Cavalry Camp at the Lower Basin, I saw one tear open an old decayed log containing a nest of ants on which it fed, lapping up both eggs and ~~ants~~ ^{nest} ants.

One seen ^{at the water-tank} behind the M. H. S. Hotel, Oct. 11, 1902.

Traces were sometimes seen in Fort Yellowstone.

Holt says that Bear-tracks are often seen in deep snow at the beginning of winter.

Specimens of Ursus americanus Pallas.

5413. -- 1902. Yellowstone National Park. Skull given
me by Mr. Wagner, one of the scouts.

5414. -- 1902. Ditto.

Ursus horribilis Ord.

(I)

Rocky Mountain Grizzly.

Quite numerous in the Park. The following specimen was known as a frequenter of the garbage heaps at the Canyon Hotel for several years past, and was said to be 12 years old, when ordered shot. He was thought to be a good sized Grizzly. He was shot by a scout named McBride, on September 26, 1902, having repeatedly broken into the Canyon Hotel storeroom and scattered the contents. I visited the hotel, in company with Capt. Hiram M. Chittenden, U.S.A., on September 24, 1902. I was then told that this Bear had battered in the heavy door of the storeroom, which was on the first floor, during the preceding night, and that ^{wrong keeper} he had not attempted to drive the beast away, because he had become increasingly ugly ever since the hotel was closed to tourists for the season. At first he would run away, but in a few days became bolder and so ugly that it was thought best to let him alone. The heavy door was splintered and completely demolished. I saw the skin, with head and feet attached, in Major Pitcher's yard, and took the following measurements:

Weight (actually taken on scales), 726 lbs. Avoirdupois.

| | | | |
|---|---|--------------|-----------------|
| " of hide and head | 140 | " orbital, " | inches |
| Tip of nose to angle of mouth, 5 $\frac{1}{4}$ inches | Diameter of the opening | | 1 $\frac{1}{8}$ |
| " eye ----- 6 $\frac{1}{2}$ " | Distance between eyes | | 4 $\frac{1}{4}$ |
| " ear ----- 14 $\frac{7}{8}$ " | Girth of head in front of ears, 3 6 $\frac{1}{2}$ | | |
| " occiput ----- 18 " | Breadth of bare muzzle pad, 3 | | |
| " end of tail - 90 " | Height " " " " 2 $\frac{7}{8}$ | | |
| Width of fresh skin at middle 63 " | Hand foot, 10 $\frac{1}{2}$ by 6. | | |
| Stretched fore limbs -- 100 " | Fore " 10 $\frac{1}{2}$ " 6. (same). | | |
| " hind " ----- 86 " | Curve of longest fore claw, 100mm. | | |
| Distance between ears ----- 18 " | Cuboid " " " " 80 " | | |
| Height of ear above crown -- 3 $\frac{3}{4}$ " | Curve of " hind " 45 " | | |
| notch -- 5 $\frac{1}{4}$ " | " " " " " " 40 " | | |
| Width of ear. ----- 4 $\frac{3}{4}$ " | | | |

Ursus horribilis Ord.

(Sheet II.)

Rocky Mountain Grizzly.

September 26, 1903. — An immature Grizzly, about 3 years old, became so bold and ugly at the camp of engineer workmen engaged in road building that it became necessary either to move the camp from Sulphur Creek at the base of Mount Washburn, or else kill the Bear. Major Pitcher ordered the bear killed. I examined the skin and skull head, in Major Pitcher's yard at Fort Yellowstone, and took the following measurements:

Male, 3 years old. Weight of skin and head, $49\frac{1}{2}$ lbs.

Distance from nose to angle of mouth — $4\frac{7}{8}$ inches

" " eye — — — — $6\frac{1}{4}$ "

" " ear — — — — $1\frac{3}{4}$ "

" " occiput — — — — 15 "

" between eyes — — — — $3\frac{3}{8}$ "

Length of orbital opening — — — — $\frac{7}{8}$ "

Upper side of head and neck, decidedly yellow. This would be called a "Brown Bear." Muzzle and head much more slender than in the old male. This Bear became savage; came into camp and chased everyone out.

Seventeen were feeding at once at the garbage heap of the Canyon Hotel, on the night of September 18, 1902.

"Mr. Dooley" a Park Grizzly was shipped to Washington in the spring of 1902; and a much larger, old male, sent in the autumn.

Taxidea taxus (Schreber).

American Badger.

July 28, 1889. —

A very large one was seen crossing the mineral "formation" of the Upper Geyser Basin. Of course it could not burrow in the rock; and it was so flurried by the presence of several vehicles and mounted soldiers that it seemed at one time to be of a mind to dive into one of many boiling geysers by which it was surrounded. It ran quite swiftly, but frequently changed its direction.

Aug. 10, 1902. — One seen at Elk Park.

Mephitis ludsonica (Richardson).

Quite numerous all over the Park — Canyon, Hayden Valley, and along the southern boundary.

Skunks were extremely abundant in the Park during the summer of 1889, much less so in 1902. Tracks were observed in the snow, on the Turkey Pen trail; and the species was noted at Yellowstone Lake, September 17, 1902. It is also found at the Mammoth Hot Springs.

Specimens of Mephitis hudsonica (Richardson).

825. - ad. Found at Mammoth Hot Springs, Yellowstone National Park, Wyoming, July 26, 1889. Skull only. Am. Mus. N. H. no. ?.

5431. Part of skull found at Mammoth Hot Springs, Wyoming, in 1902.

Gulo luscus (Linnaeus).
Wolverine.

July 28, 1889. — One was seen between the Lower and Upper geyser basins. It was crossing at an open space. Its nose was down, but it travelled at a good gait and soon disappeared from view in a woods.

Dec. 7, 1902. — Mr. E. Hofer once saw six together in Hayden Valley. Mr. Peter Holt says: "Along the south boundary are some. Several have been seen on Snake River."

Three were seen near Morris, ~~July 27, September 25,~~
1902.

Mustela caurina Merriam.

Mr. Holt saw a Pine Marten track in Snow Pass, December 10, 1902. Trappers at Jackson Hole get about \$2.50 per skin.

At the National Museum, I compared a few specimens of the Marten from Colorado and other localities in the Rocky Mountains, and found them to be nearest to Mustela caurina Merriam, from Chehalis County, Washington.

The skin of a Marten, taken at Crevasse Mountain, Park Co., Montana, by Mr. J. W. Hulse, is before me.

The ~~skull~~ skin measures 770 mm. in length, including the skin of the tail, the hairs of which extend 100 mm. beyond. The animal was a male, in prime winter coat, the hoariness of the head indicating ~~age~~ advanced age. The coat is extremely soft and thick, the drab ^{gray} underfur of the back being about 10 mm. in length, and the long overhairs varying ^{in length} from 25 to 35 mm. Hairs of tail having a expanse of 110 mm.

Color. — General color brown, not far from sepia, but tinged with raw sienna especially upon the sides and underparts, and deepening to blackish on the tail, feet, muzzle and hindhead. Head between muzzle and ears, and all ~~below~~ of under side, drab. Chest with a bright patch of tawny-ochraceous, and a narrow streak ~~of the same~~ in middle of abdomen. Back with a slightly darker vertebral area.

Some are seen each winter in the vicinity of M. H. S., where I saw a track November 16, 1902! It can climb almost vertical icy cliffs.

Putorius

A small white Weasel was found dead, in April, 1902, near the Mammoth Hot Springs. Its tracks were numerous at the Mammoth Hot Springs, in November, 1902, when it was observed to frequent hollows about long grass in which Mice (Peromyscus texanus subarcticus Allen) abound.

Specimens of *Mustela*

5301. A small white Weasel. Part of skin, and skull, of an individual found on Glen Creek, Yellowstone National Park, Wyoming, in the spring of 1902. Had probably been killed by some raptorial bird.

Putorius arizonensis Mearns.
Mountain Weasel.

April 19, 1902. — One seen on the Gardner River
Y. W. P., Montana at the altitude of 5500 feet.

September 26, 1902. — One was found dead beside the
upper reservoir in Meldrum Gulch, it having been
caught and killed by some bird of prey.

Others were seen on the Golden Gate road at the
altitude of 6900 feet.

One seen at 2-mile post, September 19, 1902.

There were many tracks on the Turkey Pen Trail,
November 17, 1902. Tracks were seen almost
everywhere, ^{in the snow} during November, 1902.

Putorius (*Lutreola*) *vision*

One was seen on the bank of the Gibbon River,
between the Norris and Lower geyser basins, July

27, 1889.

Mink are said to abound in the Park.
I saw none of them in 1902.

? Lutra canadensis pacifica (Rhoads).
Pacific Otter.

In Hall River, Echler, the Yellowstone and some of its tributaries such as "Otter" Creek, this animal has been found. It builds long slides on high snowbanks. On Bechler Creek, one rose up in the water to look at Mr. Holt; then it swam to the edge of the shore ice and again raised up its head and looked intently at him. When in the water it uttered a snorting or blowing sound.

Sorex

Sometimes this small Shrew is seen running swiftly, among the leaves of aspen thickets in the vicinity of the Mammoth Hot Springs. Some were also trapped at the marsh ~~below~~ caused by the overflow from Jupiter Terrace, below the Mammoth Hot Springs (altitude 6000 feet); and a few were trapped at Snow Pass giving the species a known vertical range of extending from 6000 to 7000 feet. The species is probably common throughout the Park.

On October 28, 1902, I set mouse traps of the "Cyclone" pattern, ^{fully, the overflow from the Mammoth Hot Springs. The place was} variety, on the edge of a marsh, densely grown with tall cat-tail, sedges, ~~rushes~~, arrow-grass, tile and other rushes; and one of these Shrews lost no time in getting into one of the traps. Eight others were subsequently taken there, one or two in traps set in shallow water, where the Water Shrews (Neosorex) were entrapped, but usually on drier ground about the edges of the marsh. Three were subsequently trapped at Snow Pass, extending the known range of the species from 6000 feet up to 7000 feet.

They are both nocturnal and diurnal. Several were caught in the traps during bright days.

The autumnal molt occurs in October.

"I caught this Shrew while digging for wood under four feet of snow, at Astringent Creek cabin, twelve miles east of Yellowstone Lake. Peter Holtz."

The above was extracted from a letter dated "Feb. 12, 1903."

Specimens of Sorex

Collector's
No.
age.
Sex
and Date.
Locality.

Length.
Tail vertebrae
Tail hairs.
Hand foot.
Head.

Remarks.

| | | | |
|--------------------|-------------------------------|-------------------|---|
| 5320 ♂ ad. Oct. 28 | Mammoth Hot Springs, Wyoming. | 108 47 52 13 22 | Edge of cat-tail marsh. |
| 5335 ♀ ad. Oct. 29 | do | 107 43 48 12.8 22 | do |
| 5336 ♀ ad. do | do | 110 45 51 13 22.5 | do |
| 5343 ♂ ad. do | do | 108 46 51 13 22 | do |
| 5348 ♂ ad. Oct. 30 | do | 113 46 50 13 22 | Mottling. do End of hair zone. Head and body 63. do |
| 5349 ♂ ad. do | do | — — — 12.5 22 | do |
| 5350 ♂ ad. do | do | 113 46 50 12.7 22 | do |
| 5351 ♂ ad. Oct. 31 | do | 112 46 50 13 23 | Mottling. do |
| 5362 ♀ ad. Nov. 1 | do | 111 50 54 13.8 22 | do |
| 5384 ♀ ad. Nov. 10 | Snow Pass, do | 112 47 53 13 23 | Under logs at roadside. |
| 5403 ♀ ad. Nov. 12 | " do | 110 45 51 13 22.5 | do |
| 5407 ♀ ad. Nov. 14 | " do | 108 44 49 13 21.5 | do |

Specimens of Neosorex

| | | Length. | Tail vertebræ. | Tail hairs | Tail first | Head. |
|-------|--|------------------------|------------------------|------------|------------|-------|
| 5333. | ♂ ad. Oct. 29, 1902. Mammoth Hot Springs, Wyo. | 154; 75; 80; 20.5; 25. | | | | |
| 5334. | ♀ ad. do | do | 154; 76; 81; 21; 25. | | | |
| 5352. | ♂ ad. Oct. 31, 1902. | do | 151; 73; 77; 20; 26. | | | |
| 5369. | ♂ ad. Nov. 3, 1902. | do | 155; 72; 77; 20; 26. | | | |
| 5370. | ♀ ad. do | do | 155; 72; 77; 20; 25.5. | | | |

Apparently quite numerous in the marsh below Jupiter Terrace, ~~at~~^{at} ~~below~~ the Mammoth Hot Springs, Wyoming, where five were trapped during the latter part of October and the first days of November. Two were taken November 3, 1902, when snow fell and the traps were taken in. All were taken in shallow water among the cat-tails and rushes beside slowly-running streams of warm water from the boiling springs.

Bats.

Oct. 5, 1902. — Several Bats were seen on a trip to the summit of Bunsen Peak, returning in the evening.

Bats were commonly observed. Species not determined. Said to occur in abundance in the cave known as the Devil's Kitchen.

Dr. Merriam reported Nycticeius crepuscularis and Vesperilio lucifugus from the Lower Geyser Basin, in 1872; also Vesperilio yumanensis from the Hot Springs, Montana.

I think Myotis evotis occurs in the Park.

